

The Highwayman

705
C.G.

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The Highwayman is Out
for More and Better Roads
in New Jersey

Route No. 16—Maintenance Division
between Rocky Hill and Harlinger

December, 1921
Vol. I
No. 5

Your Job Is Getting to be Some Business!

It sure is enough to take your breath the way things develop in this little old land of ours sometimes.

It is but a few years ago that the first "self-propelled motor vehicles"—as they were then called—were looked upon by the crowds on the sidewalks as interesting, amusing, and useless curiosities.

Who would have predicted that within the same generation *every fifth family in the U. S.* would own one of these self-propelled motor vehicles; and a *horse* would be a curiosity?

And the automobile industry has grown to be one of the biggest in the country.

And look at the way the "movies" moved in, and up. One day, a scientific toy; the next, the fifth largest industry in the land!

And the *next* thing to keep your eye on is—**ROAD BUILDING!**

Here are a few figgers to set you thinking: There are 1,196 firms manufacturing road-building machinery.

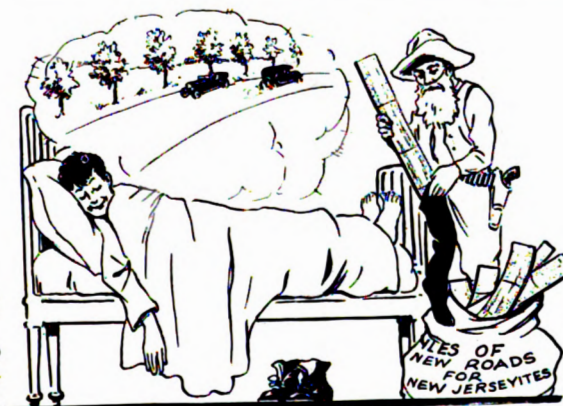
7,000 contractors have over \$65,000,000 invested in road building equipment.

It takes 80,000 highway officials to attend to the country's road building business.

And yet, the business of road building is in short pants. Eighty-five per cent. of American roads are yet to be surfaced!

Boys, you can take this tip from me—

Within a few years **ROAD BUILDING** is going to be one of the greatest industries in the country. There are going to be a lot of *big* opportunities in it. "A word to the wise"—you know the rest!



What could you have in your stocking that will give you more real pleasure than a few miles of good roads? (To know what Santa's going to bring you see the January Highwayman!)

I Want to Say Merry Christmas! To You Guys Out on the Firing Line!

Say men, I wish it was possible for me to get out over all the roads of all the State and wish each

one of you a M. C. and a H. N. Y.

Of course, it isn't possible, no way.

I would have to travel as fast as old man Santa himself; and my hoss—"Henry"—won't stand it; (by the way, Henry was pretty near frize up this morning, because I hadn't filled him with alcohol yet).

But, kiddin' aside, I want you boys that are right out on the gravel and macadam and concrete keepin' the holes filled, and the bridges safe and the snow off—I want you to feel that the road users of this little ol' state *appreciate* what you-all are doing for them.

N. J. is going to have the best highway system in this-here land, bar none! And she's got one of the best Highway Departments, right now.

I'm wishing a right Merry Xmas to all Highwaymen everywhere—but most especially do I hope that Santa will put an extra joy wave in the sock of every last man in this N. J. Highway outfit.

So here's wishing—

*A right hearty Holiday-time
To the whole blooming family
and*

12 months of good luck to boot!

The Highwayman

The Highwayman

Published Monthly By The

State Highway Department, at Trenton, N. J.

The HIGHWAYMAN will be sent free upon application to any citizen of New Jersey who is interested in "More and Better Roads For New Jersey!"

THE HIGHWAYMAN

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No Disarmament Here

There is one place in which there will be no disarmament—that is in our battle with the snow.

The time is rapidly passing when folks think of "laying up the car for the winter". With hard-surface roads to provide firm footing, and modern snow-removal equipment to keep the main highways clear, most car owners now figure on "running her through".

Keeping the trail clear, however, over 725 miles of road, is no easy task. Read the story on page 6 of this issue, and see how it is done.

• • •

Keep in Touch with Road Work

We have endeavored to point out in this column before that road work is *your* work. You pay the bills for it; and you use the product—roads. Study the program of road construction shown on pages 10 to 14 of this issue.

The information concerns you just as much as does your own business or work. You must be familiar with it to judge intelligently whether or not you, as a taxpayer are getting your money's worth out of what you contribute to the State's expenses.

Look it over!

You fellows of the Department must have something good on the other fellows you are working with, that can be used in the "Famous Sayings" column; or a serious article expressing your ideas about highway work in general, or anything in particular. Send your dope in attention Mr. H. C. Shinn. Send us your photo also.



George Paddock, of Newark
Another of Your Commissioners

Mr. Paddock was one of the organizers of the first automobile club in New Jersey and was the first president of the original automobile dealers association of New Jersey. He was also the first president of the national organization.

As a pioneer autoist, he holds the record for having driven an automobile longer than any other person in the state. He claims to have been the first automobile dealer in the state.

Mr. Paddock has long been active in the interests of good roads for the state of New Jersey. It was largely due to his efforts that the Eagan Bond Issue of 1916 was put through successfully. He was also one of the committee which succeeded in having the state legislature pass a bill for automobile reciprocity. He was appointed to the new State Highway Commission by Governor Edwards, June 20, 1920.

To the Editor

Now My Dear Mr. T.

J Wasser, won't you please in your next issue of the Highwayman

S top

T alking

A bout

T he State

E ngineers, and the State chemist, and the State

H ighways, and say something good about the State I nspectors? I think they should

G et an

H onorable Mention in your

W onderfully Interesting Magazine,

A s I am sure they too are trying to do their share in

Y our well planned road building program.

A Construction Inspector's Motto

D o your work

E ach day, so that

P eople twenty years from now can

T alk well of it.

—George H. Pratley (Southern Const. Div.)

Good work, George! We feel that we can judge your work by your Motto. There is only one reason that mention of any section of men will be left out of the HIGHWAYMAN, and that is because they imitate a clam and keep silent. If the fellow out in the field can think of something interesting to tell about their work, a good joke on the other fellow, or other information interesting to the Department or Public we would like to print it.

THOMAS J. WASSER.



Christmas Greetings from the Big Chief

In expressing my hearty Christmas Greetings to the men and women of the Department, I want to extend my thanks for the support which I have received in the work before us and to express the wish that our mutual good feeling may continue and increase.

It is a well known fact, that men associated together in any enterprise may be obedient to instructions, insofar as written or verbal instructions go, but by neglecting to take an interest in matters coming before them, as they would if it was their own business or project, the real value of the work of individuals may be greatly lost.

While an executive at the head of an organization is usually well acquainted with the principles of organization, he may not realize that the spirit necessary to make anywhere near a hundred per cent. success of the work possible is lacking in the organization unless it is pointed out to him by his associates and subordinates. The Executive Head may unconsciously be responsible for the condition which does not tend to bring out such advice or information from his subordinates. A conversation between myself and one of the men of the Department in a general way presented an opportunity for him to express the opinion in the spirit of constructive criticism that a condition prevailed in the Department, possibly due to a lack of understanding between myself and the men generally which does not tend to draw out the personal ideas of the men who are in charge of a given branch of the work. While it must be recognized by my assistants that in the final analysis the responsibility of the decision rests with the State Highway Engineer, it is my desire to consider the ideas of the men associated with me to the fullest possible extent, consistent with the time possible for me to allot to detailed discussion of the problems involved. If the individuals would prepare their ideas beforehand in such a way that the largest amount of information can be given in the shortest possible time and they would freely express their opinions without fear of unfavorable action on the part of the head of this Department, I am sure that a greater feeling of mutual respect and understanding would prevail between myself as State Highway Engineer and the men associated with me. It has been suggested to me that by my abrupt manner in conference or conversation, I shut off valuable ideas that would otherwise be given and I wish to state that if such has been the case it has been entirely unintentional on my part and must be charged to personal enthusiasm and a desire to accomplish the most possible in a short space of time.

Again assuring you of my sincere wish that you may all have a Merry Christmas and a Happy New Year, I remain,

Sincerely yours,

T. J. WASSER.

NEW JERSEY STATE HIGHWAY DEPARTMENT

December 1st, 1920

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The State Highway Commission
and

THOMAS J. WASSER, State Highway Engineer

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J. G. BRAGG	- - -	Senior Testing Engineer
F. H. BAUMANN	- - -	Senior Testing Chemist

Famous Sayings of Infamous Highwaymen

ART BULLOCK: (talking to himself) "Good night; they're going to put a temporary pavement five feet thick on the Kinkora fill. That's a dog-gone good thing."

(Looking more closely at the extra work order, but not speaking quite so loudly or enthusiastically: "Maybe it's five-tenths of a foot.")



N. J. Contractors' Association

On the next page you will find the "Highway Contractor's Column", which will appear regularly in the HIGHWAYMAN.

We hoped to give in this issue, a complete list of the membership, but were forced to omit it because of lack of space. The membership list will be given in an early issue.



Next Highway Association Meeting Early in Year

The Second Annual Conference of the New Jersey State Highway Association will be held beginning Wednesday, February 15th, 1922, and ending Saturday, February 18th. With the Association now well under way in regard to organization, there should be nothing to stop the conference from being a complete success. Several exhibits will be arranged and it is also planned to secure a number of prominent speakers, who will give interesting talks in regard to the different phases of road-building.

The Highway Contractors Column

Here They Are—Real Folks

The members of the Highway Contractors' Association of New Jersey are contractors of responsibility, and are *As* in their particular line of work. They are doing all in their power to put the highway *business* on a high plane, and to dispel that foolish opinion, which until the last few years was held by many tax payers, that a highway contractor is one that unfairly makes all the money he can from the State, Counties, and Municipalities. The Highway Contractors' Association of New Jersey is a body of reputable contractors banded together to build *good* roads in the State, and who in turn want to make a fair profit on their money invested, the same as all business men in other walks of life.

"Contractor" Joe Burke says: "And they are all *con*tractors, too."

A "Highwayman" Room in the Sussex Hospital

Contractors Chas. T. Kavanagh and Graham Van-Keuren on November 4th gave a block dance in Sussex on a few blocks of their partly constructed project, for the benefit of the Sussex Hospital. The proceeds of this dance, which amounted to \$350, was turned over to the Sussex Hospital to endow a room in that Institution for those who may be unfortunate enough not to be able to defray their own hospital expenses. This room is to be known as "The Highwayman."

The people in Sussex are exceedingly strong for Charlie and Graham.

Contractor Ralph Sangiovanni tendered a banquet on Nov. 16th to the Highway Commission, State Highway Engineer Thomas J. Wasser, heads of the various departments of the State Highway Department, several contractors and many guests, at the Hotel Penn, Trenton, New Jersey, in honor of completing Route 2, Section 2, running between Bordentown and Roebling.

No doubt many of the contractors of this Association will emulate these gentlemen and let the public realize that contractors are real, human, social, business men, who try to spread happiness and good feeling throughout the State.

A Little Of This and That

JOHN M. KELLEY: "There is rock south of Trenton."

CONTRACTOR JOE BURKE: "If I run second at any more lettings, I am going to get sore and show some of you fellows how to bid."

A. B. "CARUSO" WHELAN: "My orchestra is not here tonight."

RALPH SANGIOVANNI: "1-10 of 1%. I might just as well have been 10% high."

FRED. SCHNEIDER: "We thought we had that freight refund made out correctly."

THOMPSON & GLICKMAN: "We forgot to insert an item for \$1300."

"RECORD-BREAKER" BONHAM: "I guess that's pouring concrete."

JIM BARRETT: "I'll take a little (?) of *this* and *that*."

REES-TAYLOR INC.: "We'll show you how to build bridges."

HARRY SCOTT: "You can bet Cranbury is a fine place."

"JOHN MCCORMICK" McDERMITT: "Lou Whelan and I do not have to stay in the contracting business; we can join the Metropolitan Opera."

WILLIAM EISENBERG: "Oh, tempora, Oh mores, That should be Oh, Atco, Oh Ancora."

CARROLL EARL: "We certainly tried to make a good job from Smithville to Absecon, and I think we did it." We'll say so, Carroll.

How Does YOUR Truck Look?



Looks like new—but she isn't!
It's all in the way Rankin takes care of her.

Here is one that Johnny Rankin has run for over three months.

There surely is a big difference in the way different people look after things that are put in their charge—particularly when they do not own these things themselves. Neglect to take the best possible care of equipment is one of the big leaks in any Highway department. This particular leak might be cut down if every one concerned would make a conscientious effort in that direction, as may be gathered from the following letter:

Mr. T. J. Wasser:

There is attached hereto a Kodak print of State Highway Department Ford No. 133, which is assigned to the patrol unit under Greenwood Rankin, on Route No. 4, between Point Pleasant and Lakewood. The truck is driven by, and is the especial charge of John Rankin.

This truck is, I feel, a very fine example of what proper care will do in the way of keeping equipment in good condition. This picture was taken on October 1, after the truck had been in service for three and one-half months, and the truck is very plainly shown by the picture to be in a highly commendable condition.

Very truly yours,

ALEX. W. MUIR,

Superintendent of Maintenance.



Unskilled Labor

Unskilled labor is a term applied generally to men who do not come under a trade name, such as carpenters, masons, etc., but although the term is generally used, the meaning of the word unskilled does not apply to a great many cases of men employed in the repair, maintenance or construction of roads.

For instance, in the patching of a road which contains bituminous material, a man may go through the formula prescribed by his foreman of the department and make a patch which will roll out under traffic or creep and later fail, while another man will use his judgment and watch the results of the work that he is doing daily and like a good cook making a cake will learn to prepare the proper consistency of the material which will stick in the hole, ironing down smooth under traffic, making a permanent repair.

An individual case may seem insignificant or unimportant to the average person, but when you think of the thousands of holes that are being patched throughout the State, the failure or success of these patches when multiplied run into a matter of thousands of dollars.

The men on construction work listed on the payroll as unskilled of necessity must be skilled in the operation which they undertake in order to insure the best result for the traveling public and allow the contractor to break even or make a profit. Upon the attitude of this large class of men erroneously labeled unskilled depends the failure or success of construction and maintenance work and any other similar enterprises.

One might go even further and generalize upon the whole "Unskilled" labor class and say that it constitutes a very important factor in the economic conditions of the country at large. Because by doing what may seem to be the small and unimportant thing well and trying to improve daily in the execution of these tasks great savings are affected.



It is not what you earn, but what you save, that makes you independent.

What the Calyx Drill Tells About Joints

BY GAGE
Chemical Engineer

There is more diversified opinions regarding the proper method of making expansion joints than most any other phase of concrete pavement construction.

This difference of opinion seems to depend more upon local prejudice than upon past experience. In some localities, joints are spaced twenty-five feet, while in other localities joints are constructed only at the end of each day's work.

The materials used to make the joints also vary greatly. In some localities only pre-moulded joints are used, while in others the joints are poured. The position in which pre-moulded joint material is placed also varies. In some localities, it is set flush with the surface of the concrete while in others it is one-half inch above or below.

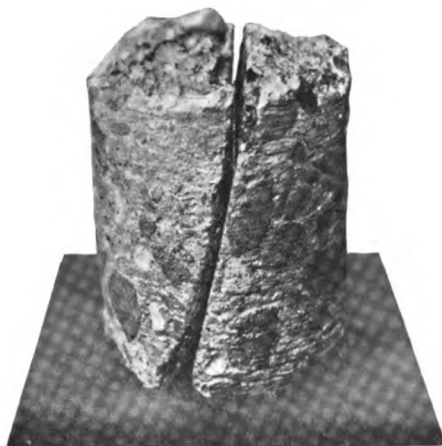
No doubt the composition of the concrete and quantity of reinforcement used should be considered in determining how and where expansion joints should be placed, also the stability of the subgrade.

Regardless, however, of the distance to which joints are placed or the kind of material used in making them, there is one point in joint construction about which there would seem to be no room for argument. *The joint should be constructed perpendicular to the surface of the concrete.*

If the joints are not so placed they will eventually slip or ride, with the results that one of the two surfaces will be higher than the other.

To prevent this, iron bars have been placed in the concrete perpendicular to the axis of the joint. But these bars are fairly costly and increase the cost of the pavement considerably when the distance between joints is not over fifty feet. They might safely be omitted if more care were exercised in the construction of the joints to insure that they are kept perpendicular to the surface of the pavement.

The Department recently cut some cores from a pavement in which the different slabs of concrete had so shifted at certain points that the surface of one slab was one-half inch below or above the adjacent slab. The cores were cut at the joints in order to determine the reason for this change in position of the concrete slabs. The pavement was constructed on about a two per cent. grade and it was found that the points had been placed in a vertical position instead of perpendicular to the surface of the concrete. The accompanying photograph shows the position of the joint very nicely for the core was cut practically perpendicular to the surface of the concrete and definitely illustrates the cause of the trouble.



The Calyx Core Drill continues to make good at locating road building faults. Above is a cross section of a concrete joint

This is another illustration of the value of the Calyx core drills. The definite determination of some of the errors in construction discovered with its aid has certainly been very beneficial to the Department. The elimination of these errors or faults in construction will greatly improve the quality of future pavements constructed.



Keep Fishin'

Hi Somers was the durndest cuss
For catchin' fish—he sure was great,

He never used to make a fuss
About the kind of pole, or bait,
Er weather, nether; he'd just say,
"I got to catch a mess today."

An' toward the creek you'd see him slide,

A-whistlin' soft and walkin' wide.
I says one day to Hi, says I,
"How do you always ketch 'em Hi?"
He gave his bait another switch in,
An' chucklin', says "I just keep fishin'."

Hi took to readin' law at night,
An' pretty soon, the first he knowed,
He had a lawsuit, won his fight,
An' was a lawyer, I'll be blowed!
He knowed more law than Squire McKnab!
An', though he had no gift of gab
To brag about, somehow he made
A sober sort of talk that played
The mischief with the other side.
One day, when someone asked if Hi'd
Eplain how he got in condision,
He laughed and said "I just kept fishin'."

Well Hi is Gov'nor Somers now;
A big man 'round the state, you bet—
To me the same old Hi, somehow;
The same old champion fisher yet,
It wasn't so much the fishin' pole,
It wasn't so much the fishin' hole,
That won for Hi his big success;
That just his fishin' on, I guess.
A cheerful stid'ly, hopeful kind
Of keepin' at it—don't you mind?
And that is why I can't help wishin'
That more of us would just keep fishin'.

—Ray Clarke Rose.



More of the Field Day Events at Sea Girt at the Annual Outing



Above, Some of the White Collar Department Getting a Little Real Exercise. (Photo by Hall)

Planning the Battle with Snow for This Winter

By Edward A. Reed
ASSISTANT STATE HIGHWAY ENGINEER

The roads in the State Highway System, including some short pieces and extensions that have not yet been taken over by the Commission, comprise about 725 miles. Of this length it will be the purpose of the State Highway Commission to remove the snow from about 402 miles. This length is divided into 31 sections ranging in length from 9 to 17 miles. It is the purpose to have the sections as near 12 miles in length as practicable.

The unit on each section will consist of 3 motor trucks of 2 or 5-ton capacity, to which are attached snow plows. These are sent to different sections of the State with the plows attached so that they will be ready when the snow-fall commences. Some sections in the southern part of the State where it is expected that there will be comparatively little snow-fall, have only 2 trucks in each unit.

These sections are assigned to contractors who are doing work for the State Highway Department or who have work in the vicinity of the sections. These contractors are responsible for the removal of the snow on the sections under their jurisdiction. Through the co-operation of the U. S. Weather Bureau, which has an office in Trenton, we endeavor to give the contractors notice eight or ten hours in advance of the approach of any severe snow storm.

As soon as the contractor receives this Snow Call, he immediately gets his organization together and proceeds to the point where the trucks are stationed so that he will be ready to take the trucks and proceed with the removal of snow as soon as the snow is about 2 inches deep. Should the call prove to be a false alarm, the Department pays for the men's time during the period which was necessary for them to be at their station.

The results achieved last year through the co-operation of the contractors in charge of the various snow-removal sections were very gratifying indeed. We were able to keep the snow from the main roads without holding up traffic. The success of the work depends to a great extent on getting an early start, that is to start out before the snow gets very deep.

Each contractor keeps in constant communication with the Central Office in order to advise of the progress of the work in his section.

A great many of the employees of the Department have volunteered their services in connection with the removal of snow during the coming winter, and these men will be assigned to sections near their homes and will report to the contractor for any messenger service or emergency work that he may find for them.

A mechanic and helper is also assigned to each section so that he can look after the equipment of the State Highway Department and keep it in running condition during the storm.



A snow like this causes as much disruption to traffic as a railroad strike

The main point impressed on each contractor is to keep the road open without interruption to traffic and should a severe storm arise in which communication would be cut off with the Central Office, the contractor would be left to his own resources and would have a good opportunity to demonstrate his ingenuity in keeping the road open no matter what his difficulties were. We expect that the snow will be removed promptly from every section as signed.

In addition to the above the forces of the Maintenance

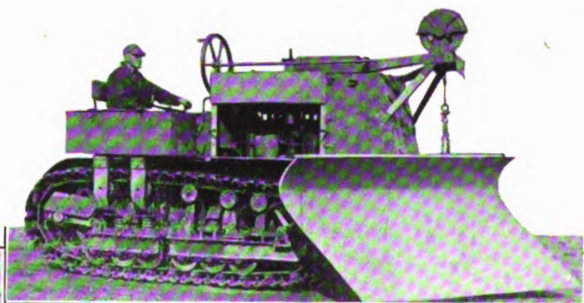
A Big Step Forward in Maintaining Gravel Roads

For many years the "dead" material along the edges of gravel roads has been a serious road problem.

Gravel for road building, as secured from the pit, is selected to contain the proper proportions of gravel stones and of "binding" material in the form of clay. There is also a varying percentage of fine sand contained in the gravel.

After this material has been put down in a road the action of rain and rubber take out of the road the clay binding material and tend to bring to the surface and leave the small gravel stones and sand. This material is scraped over the roads in the effort to fill the small holes that are formed under traffic, but after all the clay is

Down below are a few—11 out of over 100—of the Department's motor-truck snow plows, ready for this winter's war fare. They are Nash Four-wheel Drive with Good Roads Snow Plow Attachment



Here's a powerful combination—tank-type tractor and plow of enormous capacity. Down below, a close-up of one of the Nash Quads ready for business. It takes some snow to get ahead of it





But with modern snow-fighting equipment, like that above, it is possible to keep the roads open.

Department will see that the roads in the north and north-west sections of the State are kept open for traffic although the snow will not be entirely removed from these sections on account of the sleigh traffic. In the southern portion of the State and sections along the coast, the snow will be removed by Maintenance forces using tractors and scrapers, but on these sections it is not anticipated that it will be necessary to have the organization at work until after the storm has ceased unless it should appear to be of prolonged duration.

washed and worn out, the remaining sand and gravel become "dead" and useless. It is then scraped to the edge of the road; but here it obstructs the drainage of the road and narrows the travel road surface and becomes a serious danger to vehicles.

To remove this objectionable material by hand, however, has been so costly that it has not been attempted on a large scale.

By the use of the special machinery shown in the accompanying photographs, the cost of handling this material has been reduced to a point where it has become a part of practical road maintenance.

By this method a large tractor pulls a grader and gravel elevator along the edge of the road. This elevator loads the surplus or "dead" gravel into a truck, which accompanies the grader. The whole unit moves along continuously.



Side and rear views of equipment for removal of "dead" gravel from roadsides. The ten-ton tractor pulls the machine that picks up and elevates the gravel;

and the truck moves along side at the same speed. As soon as the truck is filled it pulls ahead and goes to the dump, another empty truck taking its place.



N. J. Farmers and Motorists Urge State Bond Issue to Carry on Road Construction Work

"Pennsylvania may be forced to yield her primacy in the Good Roads Movement to her sister commonwealth—New Jersey."

There is much significance in the appointment of a committee of five by the farmers organizations in the State of New Jersey to cooperate with a similar committee of motorists in urging a State bond issue of \$50,000,000 to carry on the work of highway construction. The farmers having experienced the benefits to be gained by good roads are now anxious that no time shall be lost in completing the system.

Bond issues for highway improvement have not been popular in New Jersey as far as concerns State improvement projects, and efforts in that direction have been repeatedly defeated in the Legislature. Announcement that all the anticipated revenue of the State Highway Department during 1922 will be required for the construction of a new bridge across the Raritan River, between the Amboys, however, has given new impetus to an attempt to change the Commonwealth's financial policy as regards the building of new hard surface roads, and rather than dragging the work over ten or twenty years, according to the inflow of current revenues, sentiment turns toward the bond issue.

The enterprise of Pennsylvania in pushing a comprehensive system of highways by means of a large bond issue possibly has spurred the Jerseymen to abandon the slower method of financing improvements out of current revenue. But if the farmers across the Delaware and their motorist allies are successful in carrying their proposal, Pennsylvania having failed to take advantage of constitutional revision to provide funds for future development of her highways, may be forced to yield her primacy in the Good Roads movement to her sister Commonwealth.—*Philadelphia Bulletin*



It Is Not Easy

To apologize.
To begin over.
To be unselfish.
To take advice.
To admit error.
To face a sneer.
To keep on trying.
To keep out of the rut.
To think and then act.
To forgive and forget.
To subdue an unruly temper.
To maintain a high standard.
To shoulder a deserved blame.
To recognize the silver lining.
But it always pays.—*Ohio Educational Monthly.*

The January Good Roads Congress

The coming American Good Roads Congress, to be held at the Coliseum, Chicago, on January 17-20 next, will be of intense interest to every Highway-man and road builder in the country.

This Congress is held under the auspices of the American Road Builders Association, the oldest and largest organization of its kind in the country.

Three of the eight sessions of the Congress will be devoted to a discussion of new methods used in the building asphalt, concrete, brick and other modern pavements.

One session of the Congress will be given over to the consideration of problems of highway finance and administration.

Invitations to the Congress are being sent to nearly 30,000 federal, state, county and city officials, contractors, engineers and business men in the United States and Canada.

No less important will be the National Good Roads Show to be held at the Coliseum in conjunction with the Congress. This show will contain close to \$1,500,000 worth of labor saving road machinery appliances and materials and highway transport equipment.



Cut It Out!

*The hardest work you ever do,
Is worrying about it;
What makes an hour resemble two
Is worrying about it;
The time goes mighty slow when
You sit and sigh and sigh again
And think of work ahead, and then—
Keep worrying about it.
Just buckle up and buckle in—
Quit worrying about it.
By work, not worry, you will win—
Quit worrying about it.
A task is easy once begun,
It has its labor and its fun;
So grab a hold and do it, son—
Quit worrying about it!—Partners.*



This Picture Shows

The following road building equipment as used on the Bridgeton-Shirley road,

From left to right—

Buffalo-Springfield steam roller, pulling a Lakewood sub-grader.

Two trains of batch-box cars (one near steam roller, other at mixer) pulled by Plymouth locomotives.

A Ransome 21 Paver; woven wire reinforcing and new center joint in position; Lakewood finisher running on Blaw road-forms; stretch of finished road (in immediate foreground); and (at right) a portable tent, mounted on rollers, in which the hand finishers worked.



J. A. WILLIAMS
Division Engineer in charge of State Highway
Construction in Southern New Jersey

New Contracting Firm Takes Time Limit Seriously!

BY
J. A. WILLIAMS

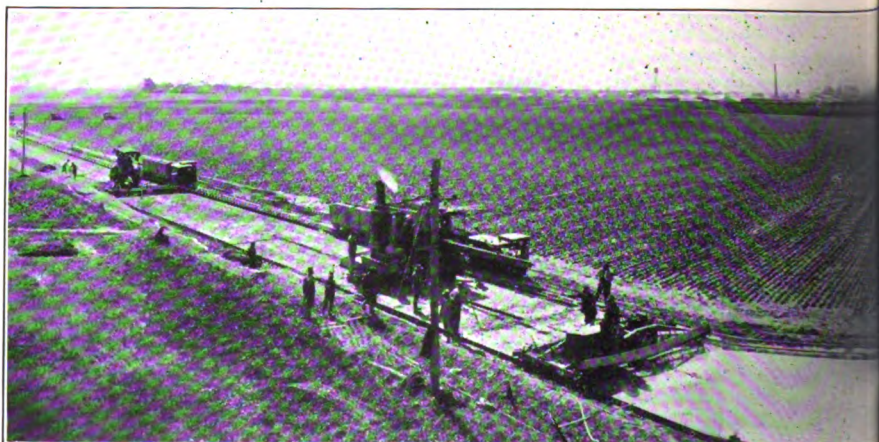
The concrete road on route 6—Shirley to Bridgeton—contains 8.3 miles.

The contract for this work was awarded to the Tri-State Construction Company of Bridgeton, New Jersey, and signed June 1. R. L. Bonham, formerly of the firm of Burke & Bonham (now Jos. F. Burke Company) is president of the Tri-State concern, which has been engaged in railroad work and the building of gravel roads in Cumberland County. The Route 6 job was their first State contract.

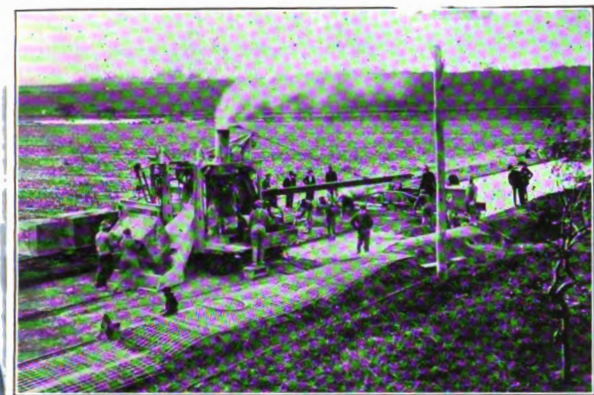
The work consisted of placing 98,254 square yards of Reinforced Concrete Pavement, 20 feet wide, 8 in. thick, with a center joint; proportioned, 1-2-4, with a mixing period of 1½ minutes; 5547 lineal feet of 5 ft. wide combined 8-inch curb and 6-inch thick gutter in 20 foot lengths; and the placing of 300 cubic yards of concrete pavement 6 inches thick at entrances and cross roads. A total of about 23,000 cubic yards of concrete, and 15,000 cubic yards of excavation, together with the usual drainage and guard rail features.

Both the center-joint and the type of reinforcing used were new features in road construction in this State.

This construction followed the line of Route 6 and replaces the gravel surface put down by Salem and Cumberland Counties about 1900, and has a graded width of



One of the Two Complete Concrete-Road-Building Units Used



Ransome 21 Caterpillar Mixer at Work
on Route 6

about 30 feet between ditches and guard rails. The work starting at the Bridgeton City Line goes through a rich farming country, through the settlement of Deerfield Street in Cumberland County, to Shirley in Salem County.

This work is most notable of any of the contracts that have been let by the State Highway Department, because of the fact that the contractor, either in making up his bid or after his contracts were executed, *happened to notice that a date of completion was specified*, and considering it seriously, proceeded to make his plans accordingly.

This action on the part of the contractors immediately proved their amateur standing, as judged by all past performances of highway construction. According to past experience, the contractor would either have overlooked the pages containing this unreasonable and impossible date, or, if they did notice it, would immediately compare the length of time allowed, with their previous work, and come to the conclusion that the copy of specifications which they had, was in error as to the year given for the completion date.

Or, had the date been verified, such comments as the following might have been expected:—

"Who ever heard tell of grading and building 8.3 miles of road in one year, anyhow?"; and, "If I should finish it this season, I would have to lay off all my good men over the winter. You know, I keep all my good men over winter, so I can do good work"; also, "the railroads will fall down and not get me in materials enough. What's the good of another mixer if there are not materials?" etc., etc.

The contract was signed on June 1. Grading was started at Shirley Station 441, June 2nd, and at Station 192 on June 16th. The first road building equipment was on the

ground on June 19th. The first concrete laid at Shirley on July 6th.

The first day 27 feet was laid. Foreman never ran a concrete gang before and the crew was green. The first week's progress of 785 lineal feet; the second week's, 851 lineal feet; and at the end of the 4th week they were making an average progress of 300 lineal feet per day.

A two shift programme was then started on August 8th (another amateur trick). The first shift, going on at 4 A. M. worked until noon, and the second shift, going on at 12 M., worked until 8 P. M. The finishers worked through to midnight, finishing by artificial light.

This mixer complete to Station 185x21 on October 10, having laid 25,600 lineal feet of 20 ft. wide pavement in 75 working days. In the meantime, another mixer was started at Station 185x21 on July 19th and working one shift only, completed the pavement to Station 0x00 on August 30.

Equipment: 3 Ransome No. 21 Caterpillar Mixers. Two only used, one kept in reserve.

Five 3 Ton Plymouth Locomotives.

Two 6 Ton Plymouth Locomotives.

Sixty-two Cars, two batch Boxes per car. Light Rail-way Equipment Company.

30,000 ft. 24 in. Gage track with 8 sets switches.

One 5 ton Best Tractor. Used to stretch reinforcing, pull subgraders, and scarifiers.

One ten ton Holt used with Adams Scarifier Grader for shallow grading and to shift R. R. Cars at loading plant.

Two Marion Steam Shovels, No. 21, with Clamshell Bucket to unload sand and stone (1 part time) (1 full time).

One Keystone grader (part time).

Two Ten Ton Steam Rollers.

Tunnel Capacity, 2000 tons stone and 1000 tons sand. Cement House Capacity 2000 bbls. Cement.

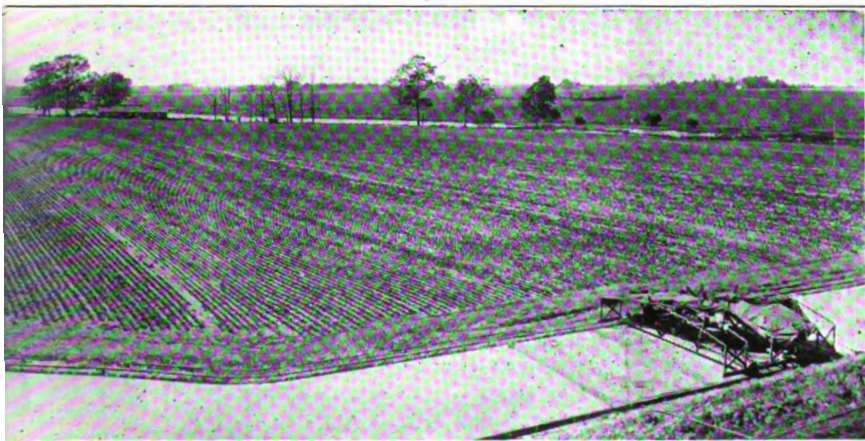
Outside of listing the main equipment, I will not go into many details, except to say that it was working most of the time; and when it wasn't some one *immediately* found out the reason why. And then it did.

They even had a track gang on the narrow gage track, keeping it in shape. They ran their trains on schedule at 8 miles per hour. During a great part of the season over 20 carloads of materials were used a day and most of the time four days' supply was on hand. Only 5 days delay was caused by shortage of materials, two days for stone, and three days for reinforcing.

The maximum force employed by the contractor during this work consisted of one superintendent, nine foremen, and 167 men, distributed as follows: three foremen and 81 men on the mixers operating them, setting forms, fine grading, etc.; one foreman, 16 men at the unloading plant; one foreman, 22 men maintaining and moving track and switches; one master mechanic, 16 men operating hauling equipment; three foremen and 32 men and 6 teams on the grading.

There was at all times a survey party of three men on the work, together with five inspectors; all in charge of a construction inspector. The inspection force was divided as follows: two men at the plant, one for each shift, three men on the mixers, one on the mixer working one shift and two on the two shift mixer. The construction inspector had general supervision of all work, stopping at each operation several times a day.

The force of inspectors kept accurate account of all materials going into this work and we find that the materials actually used in the concrete work check within .014% of the theoretical amount required.



Construction Co. on the Bridgeton-Shirley (Route 6) Job

CONDENSED MAINTENANCE REPORT
JAN. 1, 1921, TO NOV. 15, 1921

Route	Concrete Maintained Miles	Macadam Maintained Miles	Gravel Maintained Miles	Bit. Conc. Maintained Miles	Bit. Mac. Maintained Miles	Brick Durax Misc. Maintained Miles	Total Maintained Miles	Shoulders R. O. W. Maintained Miles	Macadam Resurfaced Miles	Gravel Resurfaced Miles	Penetration Shoulders Cona. Miles	Detours Maintained Miles
1	11.361			12.161		1.420	24.942	15.400			1.810	8.150
2		15.419		4.600			20.019		3.850			
3	14.056	0.100		13.000			27,156					
4	8.621	6.416	63.734	9.367	1.805	2.820	92.763	2.000		13.357		17.600
5	1.136	20.457	4.810	21.879		0.720	49.002	4.370	2.220	1.000		
6	0.074	5.060	13.817	3.102	2.000	0.523	24.576		3.660	1.000		38.000
7		15.960	12.700				28,660		7.810	3.300		
8	0.050	19.209		10.772	6.040		36.071		5.260			
									*0.070			
9	0.189	30.886		11.986	1.494	1.420	45.975		6.924			3.100
10	0.652	1.775		3.830			6.257					
11												
12	0.600	5.426		2.190	8.520		16.736		2.200			1.000
									*0.250			
13	8.191	4.250		5.090	0.300	1.400	19.231					
14	5.780		35.500				41.280		3.750			
15			44.300			0.250	44.550			5.630		0.700
16		29.305		4.638	0.720		34.663		16.360			
	50.710	154.263	174.861	102.615	20.879	8.553	511.881	21.770	48.604	28.037	1.810	68.550

* Macadam Resurfaced and Bituminous Concrete surface laid.

Briefly summarizing the above table, the outstanding features of the same are as follows:

Total Mileage Maintained511.881

(Of the above total mileage, 329,124 miles, or 64%, were waterbound macadam and gravel, low type pavements lacking in the durability required by modern trunk line traffic.)

Miles of Macadam Resurfaced48.604

Miles of Gravel Resurfaced28.037

Miles of Detour Maintained68.550

Tons of Broken Stone, Pea Gravel, and

Crushed Slag used100,738.70

Cubic Yards of Gravel used78,884.00

Gallons of Bitumen used for Surface Treat-

ment of Water-Bound Macadam362,185.00

Gallons of Bitumen used for Cold-Patching

Water-Bound Macadam134,009.00

Gallons of Lignin Binder used for Treatment

of Gravel Roads792,112.00

Bridges Painted66

Bridges Redecked16

(Of the above bridges painted and redecked, one was 1,095 feet in length, another 878 feet, while the remainder were of varying lengths down to 10 feet.)



STATE AID APPORTIONMENTS—1921-1922

Before giving the State Aid apportionments for the years 1921 and 1922, it seems desirable that a few words in explanation of this source of revenue might also be given in order that the public will have a better understanding of the funds used in highway construction.

Chapter 395, Public Laws of 1912, amendments thereto and supplements thereof provides for the annual appropriation by the State Legislature of \$500,000.00 to be apportioned among the Counties applying for same under State Aid. The law provides that the State may share to the extent of 40% in the cost of construction plus engineering, inspection, and contingencies. This money is used for new construction work, and is apportioned among the Counties of the State upon their request for same. It will be seen that the \$500,000.00 apportionment for such work while of some assistance to the Counties, is totally inadequate when it is stated that this amount fell short over three (3) times this year the amount of money re-

Continued on Page 11, Column 2

Motor Vehicle Aid Allotments

In making public the disposition of the 1921 Motor Vehicle allotments, it seems desirable to explain the meaning of the Motor Vehicle Aid Fund, the purpose to which it is devoted, and some of the results gained through this source of revenue.

In 1906 the Legislature provided for the registration of all Motor Vehicles and the collection of license fees for vehicles and drivers, and it is the money collected through this agency that is used for maintenance and betterment work, extraordinary repairs, and reconstruction work on roads in the State Highway system and Counties of the State.

An item of \$210,000.00 is taken from the Motor Vehicle receipts and set up to the credit of Township road improvements, authorized under Chapter 217, Public Laws of 1916, and amended under Chapter 53, Public Laws of 1920. This Township Aid money is used for the improvement of unimproved Township roads.

The Counties are required to match the amount allotted by the State.

Heretofore allotments to the Counties were based on estimates of cost submitted by the County Boards of Freeholders, which estimates were arrived at after a study had been made of the mileage and repairs to be taken care of.

This year the sum of \$2,000,000.00 was apportioned among the various Counties of the State for maintenance, betterment, extraordinary repairs, and reconstruction work on County roads. This year the money was apportioned under a method wherein each County's population, road mileage, and area were compared with the total road mileage, population and area of the State. These comparisons arranged in a percent. of the total value of the State at large and an average of these percentages being taken would give the average percent. for each County, which average percent. multiplied by the total amount for distribution would give the County's apportionment. The road mileage was based on the report submitted by each County July 1, 1920, and the area and population of each County was taken from the 1921 Legislative Manual.

The above method is used by the Federal Government in apportioning Federal Aid allotments.

The following is a list of the allotments to the Counties for the year 1921:

CONDENSED MAINTENANCE REPORT JAN. 1, 1921, TO NOV. 15, 1921

Broken Stone Used, Tons	Bitumen Surface Treatment Gallons	Bitumen Cold Patch, Gallons	Bitumen Penetration Gallons	Lignin Binder Applied, Gallons	Gravel Used Cu. Yd.	Pea Gravel Used, Tons	Slag Used Tons	Bit. Concr. Used, Tons	Bridges Painted	Bridges Redecked	Wood Preservative Gallons	Bridges, Minor Re- pairs, Addition, Redecking
2,817.70	3,905.00	25,050	10,108					695.70	6			
4,214.40	38,053.00	7,000			330.00	51.70	1,056.90	304.90	4	1	400	
735.40		4,500			1,578.00			487.50				
462.70		3,597		350,441	32,306.00			503.70	4	5	1697	6
5,045.10	45,226.00	11,871		11,000			1,735.90	676.80	11	1		
10,196.30	2,500.00	5,250		31,765	3,660.00		115.40			2	2550	
10,621.40	23,320.00	4,947		58,495	7,679.00		685.90		7	1		2
8,294.20	28,103.00	10,350			817.00		774.60	14.80	6	1		1
13,279.00	108,281.00	17,300					3,724.70	16.30	5			
192.30		3,897								1	550	
5,128.30	36,523.00	16,700					1,970.90	39.40	12			
1,361.70	15,057.00	1,200		155,869	14,499.00	254.20			3	1		1
		600		184,542	18,015.00							2
									6	2		1
24,666.40	61,217.00	21,747				1,193.80	1,621.80		2	1		1
87,014.90	362,185.00	114,009	10,108	792,112	78,884.00	2,099.70	11,624.10	3,383.40	66	16	5197	15

Continued from Page 10, Column 1

requested by the Counties under the State Aid Act. In other words, the total amount of State Aid asked for was \$1,700,000.00. Effort is made, however, to allot to the Counties who make requests for State Aid a sum which will be of assistance, and at the same time not bar some other County from receiving benefits under this act. The Department attempts to make a small amount of money help in the construction of a good many roads.

State Aid allotments for the years 1921-1922 are as follows:

County	Distribution to come within Funds Available
Atlantic	\$20,000.00
Bergen	35,000.00
Burlington	
Camden	29,000.00
Cape May	24,000.00
Cumberland	25,000.00
Essex	35,000.00
Gloucester	25,000.00
Hudson	24,000.00
Hunterdon	
Mercer	15,000.00
Middlesex	35,000.00
Monmouth	21,000.00
Morris	
Ocean	16,000.00
Passaic	24,000.00
Salem	15,000.00
Somerset	16,000.00
Sussex	20,000.00
Union	27,000.00
Warren	19,000.00
	\$425,000.00

\$425,000.00 Funds available for Distribution
75,000.00 Reserve for Items of engineering, inspection,
and administration.

\$500,000.00 total S. A. Fund.

GENERAL

There are striking examples in each County of the State of the excellent results procured from the expenditure of the State Aid and Motor Vehicle Aid moneys. Practically every County has adopted a hard surface policy, so that the roads of today being built or reconstructed are at this time or will be in a few years good hard paved, smooth riding roads suitable for traffic at all seasons of the year.

County	% of Total Square Miles	% of Total Mileage	% of Total Population	Average Percentage	County's share of \$2,000,000.00
Atlantic	7.421	6.026	2.658	5.368	\$107,360.00
Bergen	2.993	8.918	6.676	6.195	123,900.00
Burlington	10.056	7.865	2.591	6.837	136,740.00
Camden	2.754	3.656	6.036	4.148	82,960.00
Cape May	5.483	4.160	.616	3.419	68,380.00
Cumberland	8.199	2.358	1.944	4.167	83,340.00
Essex	1.577	6.014	20.662	9.417	188,340.00
Gloucester	4.151	3.545	1.528	3.074	61,480.00
Hudson	.735	1.473	19.935	7.381	147,620.00
Hunterdon	5.339	2.313	1.042	2.898	57,960.00
Mercer	2.772	5.666	5.066	4.501	90,020.00
Middlesex	3.945	9.731	5.144	6.273	125,460.00
Monmouth	6.541	6.774	3.325	5.546	110,920.00
Morris	5.838	6.026	2.620	4.828	96,560.00
Ocean	9.129	2.863	.702	4.231	84,620.00
Passaic	2.415	7.891	8.212	6.172	123,440.00
Salem	4.735	4.293	1.159	3.395	67,900.00
Somerset	3.709	4.248	1.521	3.159	63,180.00
Sussex	6.509	2.089	.789	3.129	62,580.00
Union	1.276	2.336	6.342	3.318	66,360.00
Warren	4.423	1.755	1.432	2.544	50,880.00

\$2,000,000.00

Disposition—1921 Motor Vehicle Aid Fund

State Highway Maintenance	\$1,855,000.00
Toll Bridge Acquisition	250,000.00
Detours	150,000.00
Amboy Bridge Repairs	100,000.00
Emergency Fund to Counties	225,000.00
Snow Removal	100,000.00
Operation of Bridges	45,000.00
Department Administration	150,000.00

\$2,875,000.00

Township Aid	\$210,000.00
Motor Vehicle Department expenses	292,000.00

\$3,377,000.00

Motor Vehicle Aid to Counties	2,000,000.00
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\$5,377,000.00

Total estimated collections	\$5,400,000.00
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State, County and Township Roads

Mileage under construction, under contract ready for construction or completed during the year 1921 for the several different types of pavement

Type of Road		Under Const.		Under Contract		Completed	Totals by Types	
		By Mulp.	Total	By Mulp.	Total		By Mulp.	Total
Sheet Asphalt on Concrete Base	1 State 2 County 3 Twp.	4.636 4.661	9.297	1.610 0.090	1.700	11.120	11.120	4.636 17.391 0.090
Sheet Asphalt on Stone Base	1 2 3	4.304	4.304		0.0	17.435	17.435	21.739
Bituminous Concrete on Concrete Base	1 2 3	19.978 3.096	23.074		0.0	2.965 27.200	30.165	22.943 30.296
Bituminous Concrete on Stone Base	1 2 3	3.150	3.150		0.0	15.175	15.175	18.325
Concrete	1 2 3	40.181 7.569	47.750	1.420	1.420	45.358 43.905	89.263	85.539 52.894
Brick	1 2 3		0.0		0.0	0.460	0.460	0.460
Block	1 2 3	3.334	3.334	0.660 0.090	0.750	1.110	1.110	5.104 0.090
Macadam, Penetration	1 2 3	1.095 2.030	3.125		0.470	12.218	12.218	1.095 14.248 0.470
Macadam, Water Bound	1 2 3		11.800	2.530 6.210	8.740	21.219 26.390	47.609	23.749 44.400
Macadam, Surface Treated	1 2 3		2.000		3.500		0.0	5.500
Gravel	1 2 3	16.052 25.045 25.200	66.297	3.200 12.500	45.700	7.442 57.317 14.830	109.589	23.494 85.562 112.530
Cinders	1 2 3		0.750	0.800	0.800	2.500	2.500	4.050
Slag	1 2 3		0.0		0.0	1.000	1.000	1.000
Other Types	1 2 3	0.608 3.680	4.288		0.0		0.0	0.608 3.680
Total			179.169		63.080		337.644	579.893

TOWNSHIP AID

Chapter 217, Public Laws of 1916, and amendments thereto provide for the apportionment of \$210,000.00 taken from the Motor Vehicle Fund, among the Townships of the State applying for the same to be used in the improvement of unimproved Township roads. The Townships are called upon to supply one-quarter of the estimated cost of the improvement, which amount may be raised by tax, bond issue, or public subscription.

The total of apportionment of \$210,000.00 is allotted on

the basis of \$10,000.00 to the Townships of each County.

Below is given a list of Township allotments for the year 1921, which begins July 1, 1921. There is also given below a list showing the disposition made of cancellation funds of the Township Road money, which was collected through the cancellation by the Department of allotments to Townships which after having made application made no move to use the money apportioned to them.

Continued on next page

County	Township	Road	State's Share	Township's Share	Length Miles	Type
Atlantic	Nothing allotted.	\$10,000.00 available for distribution				
Bergen	Franklin	Cedar Hill Ave.	\$6,000.00	\$2,000.00	1	Bit. Mac.
Bergen	Franklin	Ravine Ave.	4,000.00	1,500.00	1	Bit. Mac.
Burlington	Chesterfield	Crosswicks-Ellisdale	900.00	300.00	2½	Cinders
Burlington	Chesterfield	Crosswicks-Chesterfield, Sec. 2	1,288.00	429.33		
Burlington	Mansfield	Columbus-Florence	2,112.00	1,000.00	.8	Cinders
Burlington	Tabernacle	Tabernacle-Indian Mills	3,000.00	1,000.00	2½	Gravel
Burlington	Medford	Oliphants Mills-Taunton	2,700.00	900.00	1	Gravel
Camden	Berlin	Berlin-Jackson	1,650.00	550.00	1½	
Camden	Clementon	Kirkwood-Berlin	1,850.00	1,500.00	¾	Gravel
Camden	Gloucester	Erial Road	2,400.00	800.00	2	Gravel
Camden	Haddon	Crystal Lake Ave.	100.00	100.00	.13	Gravel
Camden	Voorhees	Morristown & White Horse	4,000.00	2,234.00	1.4	Gravel
Cape May	Dennis	Clairmont Road	1,200.00	400.00	.6	Gravel
Cape May	Lower	Shunpike & Stimpson Lane	3,000.00	1,000.00	.6	Gravel
Cape May	Middle	Court House-Dias Creek	1,200.00	400.00	.7	Gravel
Cape May	Middle	Swainton-Goshen	1,200.00	400.00	1	Gravel
Cape May	Middle	Wildwood Jct. Road	1,200.00	400.00	1	Gravel
Cape May	Upper	Commonwealth Ave. & connect.	1,800.00	600.00	1-3	Gravel
		Unrequested balance available for distribution, \$400.00				
Cumberland	Deerfield	Finley Sta.-Silver Lake	3,000.00	1,000.00	1¾	
Cumberland	Deerfield	Love Lane	3,000.00	1,000.00	1½	
Cumberland	Deerfield	Finley Sta.-Woodruff	2,000.00	666.67	4	
Cumberland	Deerfield	Deerfield-Seeley	2,000.00	666.66	2¼	
Essex	A total of \$10,000.00 available as no requests for aid were made.					
Gloucester	Mantua	Mantua-Knights Run	5,000.00	1,666.67	3	Gravel
Gloucester	Monroe	Williamstown-Glassboro	2,000.00	666.67	1	Gravel
Gloucester	Monroe	Williamstown-Sicklerville	3,000.00	1,000.00		
Hudson	N. Bergen	Dallystown Road	10,000.00	3,333.33	.174	Con. Blk.
Hunterdon	Alexandria	Everittstown-Pittstown	7,000.00	7,000.00	5	Mac.
Hunterdon	W. Amwell	Old Brunswick Pike	3,000	1,000.00	4	Mac.
Mercer	No application submitted, therefore a total of \$10,000.00 is available.					
Middlesex	Piscataway	New Market Avenue	10,000.00	3,500.00	1	Mac.
Monmouth	Middletown	Palmer Avenue	2,500.00	2,500.00	1	Gravel
Monmouth	Shrewsbury	Sycamore Avenue	2,600.00	2,600.00	1.086	Gravel
Monmouth	The sum of \$4900.00 remains unallotted.					
Morris	Washington	Naughtright-Bartley	5,400.00	1,800.00	3.32	Mac.
Morris	Mendham	Ralston-Gladstone	4,600.00	1,533.33	2.3	Mac.
Ocean	No requests submitted, therefore a total of \$10,000.00 available.					
Passaic	No requests submitted, therefore a total of \$10,000.00 available.					
Salem	Mannington	Hawk's Bridge Road	2,000.00	666.67	1-3	Cinders
Salem	Pittsgrove	Grier's Lane	1,500.00	500.00	.6	Gravel
Salem	Pittsgrove	Hannon's Lane	1,000.00	333.34	½	Gravel
Salem	Pittsgrove	Willow Grove Road	1,000.00	333.34	2	Gravel
Salem	U. Penns Neck	Auburn-Pennsville	4,500.00	1,500.00	1½	Gravel
Somerset	Bedminster	Gladstone-Pottersville, Sec. 2	2,000.00	2,000.00	0.524	Mac.
Somerset	Montgomery	Bolmer Cor. Blawenburg	8,000.00	2,666.67	1.38	Mac.
Sussex	Sparta	Sparta-Woodport	7,500.00	2,500.00	3.68	
Sussex	Fredon	Newton-Swatswood	2,500.00	833.34	½	Gravel
Union	A total of \$10,000.00 allotted, no requests submitted.					
Warren	Franklin	Broadway-Asbury	1,000.00	1,000.00		
Warren	Hardwick	B'airstown-Stillwater	4,500.00	1,500.00	4	Gravel
Warren	Pohatcong	Forge-Springtown, Sec. 2	4,500.00	1,500.00	1.07	Mac.

DISPOSITION OF CANCELLATION FUND

Burlington	Chesterfield	Crosswicks-Chesterfield, Sec. 2	4,712.00	1,570.67	2	
Camden	Haddon	Crystal Lake Ave.	400.00	400.00	.13	Gravel
Camden	Winslow	Fleming Tpk.	3,600.00	1,200.00	2½	Gravel
Camden	Winslow	Old Brooklyn and Chew's Landing	6,000.00	2,000.00	2¾	Gravel
Camden	Winslow	Central Avenue	4,500.00	1,500.00	3	Gravel
Cumberland	Deerfield	Finley Sta.-Silver Lake	2,100.00	700.00	1¾	
Cumberland	Deerfield	Love Lane	500.00	166.66	1½	
Cumberland	Deerfield	Finley Sta.-Woodruff	4,000.00	1,333.33	4	
Cumberland	Deerfield	Grier's Lane	3,000.00	1,000.00	1¼	
Cumberland	Deerfield	Center Dist.	4,000.00	1,333.00	2	Gravel
Cumberland	Deerfield	Northville Road	6,000.00	2,000.00	2¼	Gravel
Cumberland	Deerfield	Silver Lake, Sec. 2	3,000.00	1,000.00	1½	Gravel
Cumberland	Deerfield	Finley Sta.-Seeley, Sec. 2	3,000.00	1,000.00	1½	Gravel
Cumberland	Greenwich	Springtown-Salem	1,500.00	500.00	¾	
Hunterdon	Franklin	Croton-Quakertown	3,498.52	1,166.18	3.228	Mac.
Morris	Chester	Ralston-Gladstone	3,750.00	1,250.00	.893	Mac.
Morris	Mendham	Ralston-Gladstone	1,286.25	428.75	2.3	Mac.
Salem	Pittsgrove	Willow Grove Road	2,750.00	916.67	2	Gravel
Somerset	Bedminster	Gladstone-Pottersville, Sec. 2	808.70	808.70	.524	Mac.
Somerset	Bernards	\$10,000.00 available.				
Sussex	Fredon	Andover-Greendale	1,200.00	400.00	1.1	Gravel
Sussex	Hampton & Stillwater	Newton Swatswood Road	8,098.62			
Warren	Lopatcong	Delaware River Road	3,000.00	1,000.00	3	

STATUS OF HIGHWAY CONSTRUCTION—LISTED BY COUNTIES

In accordance with Chapter 14, Laws 1917, and amendments thereto

June, 1918, to November, 1921

County	Total Mileage	Construction by State Miles Completed	Miles under Contract	County Reimbursement Construction by Miles Completed	Miles under Contract	Total Mileage Completed or under Contract	Total Construction Cost
Atlantic	54.8	14.787		9.87	5.69	30.347	\$1,377,177.62
Morris	57.2	9.846	14.939	1.588	3.39	29.733	2,022,336.11
Gloucester	21.4	12.155		5.0		17.155	654,730.55
Salem	29.2	3.165		10.798		13.963	429,651.41
Warren	47.7			13.457		13.457	968,599.11
Middlesex	43.8	12.601	49			13.091	1,080,894.41
Cape May	50.2	11.654				11.654	521,005.44
Monmouth	54.8	7.635	3.621			11.256	666,094.91
Burlington	29.9	6.786	4.044			10.830	898,458.35
Camden	32.9	10.712				10.712	598,286.11
Mercer	34.1	9.207	.632			9.839	601,860.71
Somerset	50.3	6.482		2.392		8.874	537,936.81
Cumberland	40.1				8.305	8.305	458,804.01
Sussex	21.50		7.05			7.05	477,377.57
Union	21.5	1.034	4.598	45		6.082	701,501.41
Hunterdon	21.1		4.182			4.182	425,940.40
Bergen	10.0	2.424		.652		3.076	880,513.41
Passaic	24.2	1.162		1.39		2.552	158,667.39
Ocean	52.3						
Essex	24.1						
Hudson	4.7						
	725.8	109.650	39.556	32.110	30.842	212.158	\$13,459,837.25

STATE HIGHWAY CONSTRUCTION
Schedule of Completed Concrete Roads

Route	Section	Location	Length in Miles	Total Mileage by Route	Date of Contract	Date Completed or Opened for Traffic	Paved Width ft.	Thickness at Center (in.)	Thickness at Sides (in.)	Mix
1	1	Metuchen to Menlo Park	1.811		6-10-18	6-1-19	18	10½	8	1-1½-3
1	1A	Lake Ave. to Middlesex Ave., Metuchen	.283		9-20-19	9-1-20	18	10½	8	1-2 -3
1	2	Menlo Park to Rahway	3.548		8-12-18	12-10-19	20	10½	8	1-2 -3
1	3	Robbinsville to Windsor	2.55		7-14-19	11-13-20	18	10½	8	1-2 -3
1	4	Windsor to Hightstown	3.453		5-27-19	12-20-19	18	10½	8	1-2 -3
1	5	Hightstown-Millstone River	1.44		4-19-20	9-26-21	18	10½	8	1-1½-3
1	8	Leesville Ave. to Milton Ave., Rahway	.918	14.007	9-8-20	11-13-20	29	10	8	1-1½-3
2	1	Burlington-Roebling	5.0	5.0	9-5-18	6-30-21	18	8¾	6	1-2 -3
3	1	Hammonton to Ancora	2.778		8-18-18	1-1-20	18	8¾	6	1-2 -3
3	2	Atco to Berlin	2.987		6-14-18	11-7-19	18	8¾	6	1-1½-3
3	3	Elwood to Da Costa	3.873		5-20-19	1-5-20	18	8¾	6	1-2 -3
3	4	Egg Harbor to Elwood	5.867		5-20-19	12-13-20	18	8¾	6	1-2 -3
3	5	Da Costa to Hammonton	4.418		5-27-19	10-20-20	18	8¾	6	1-2 -3
3		Absecon to Egg Harbor	9.87		10-1-19	8-16-21	20	8¾	6	1-2 -3
3	1-2	Ancora to Atco	4.947	34.740	5-3-21	10-26-21	20	8¾	6	1-2 -4
4	1	Red Bank to Middletown	3.5		7-23-18	6-30-19	18	8¾	6	1-1½-3
4	1A	Navesink River to Conover Lane	.221		8-15-19	12-20-19	18	8½	6	1-2 -3
4	2	Middletown to Betsy Ross Farm	2.923		5-26-19	12-27-19	18	8½	6	1-2 -3
4	3	Broadway to Scott Ave., So. Amboy	.824		2-12-20	9-10-20	20	8½	6	1-2 -3
4	3A	City Line to Stevens Ave., So. Amboy	.582		5-3-20	9-8-21	32-53	8	8	1-2 -4
A4	4	Keyport	.446	8.496	5-3-21	9-30-21	22-46	12	12	1-1½-3
5	1B	Morris Plains to Morristown City Line	.886		5-2-19	11-15-19	22	10½	8	1-2 -3
5		Main Street, Rockaway	.631	1.517	9-6-18	12-30-18	25	8	8	1-2 -3
6	1	Mullica Hill-Mantua	5.15		4-14-19	12-17-20	18	8¾	6	1-2 -3
6		Woodstown-Mullica Hill	7.248		4-17-20	8-15-21	18	8¾	6	1-1½-3
6	4A	Cumberland Co. Line-Shirley	.82	13.218	5-31-21	10-20-21	20	8	8	1-2 -4
8	1	Riverdale to Pompton River	4.331		7-24-19	12-18-20	18	8½	6	1-2 -3
8	3	Whites Bridge to Bloomingdale Center	1.162	5.493	4-28-20	12-29-20	18	8½	6	1-1½-3
9	3	Lenox Ave. to Elmer St., Westfield	.116	.116	10-16-20	11-6-20	22	10½	9¼	1-1½-3
10	2	Anderson Ave., Fort Lee-Broad Ave., Morsem	1.329		5-26-20	5-10-21	20	10½	8	1-1½-3
10	4	Bergen Turnpike, Section 2	.652	1.981	7-9-19	12-15-19	18¼	9	9	1-2 -3
B12		Morris Tpk. 1 mile west of New Village	.909	.909		11-1-12	14-18	4-8	5-7	1-2½-5
13	1	Kingston to Ten Mile Run	3.665		4-29-18	6-10-20	18	10½	8	1-1½-3
13	2	Ten Mile Run to Three Mile Run	4.526		11-7-18	8-1-20	18	10½	8	1-2 -3
13	3	Three Mile Run to New Brunswick	3.841		7-21-19	12-9-20	18	10½	8	1-2 -3
13	4	Kingston to Princeton	1.764	13.796	2-4-20	12-9-20	18	10½	8	1-2 -3
14	1	Cape May to Rio Grande	4.639		11-15-18	12-8-20	18	8¾	6	1-2 -3
14	2	Rio Grande to Wildwood Jct.	3.575		5-15-19	2-24-20	18	8¾	6	1-2 -3
14	3	Wildwood Jct.-Cape May Court House	2.025		5-15-19	12-15-19	18	8¾	6	1-2 -3
14	4	Cape May Court House	1.415	11.654	6-7-20	2-2-21	18	8¾	6	1-1½-3
16	1	Bernardsville-Mine Brook	2.392	2.392	5-12-20	5-11-21	18	8½	6	1-2 -4

B Experimental Concrete Road Construction.

A Total mileage of Route 4 Section 4 Keyport .783—4.46 Concrete, .337 Amesite.



Lincoln Highway, near Metuchen (Courtesy Portland Cement Association)

Concrete Facts for Concrete Road Builders

1. Our plant at Vulcanite, Warren County, New Jersey, has a capacity of 2,000,000 tons a year—two million!
2. We make immediate shipments to concrete road jobs anywhere.
3. We believe that service is just as important to you as good cement. Our customers say they get both. Let's get together and talk cement.

VULCANITE PORTLAND CEMENT CO.

PHILADELPHIA

BOSTON

NEW YORK

MERRY CHRISTMAS TO YOU FROM EDISON

OUR ENTIRE ORGANIZATION DESIRES TO TAKE THIS OPPORTUNITY TO EXPRESS THE PLEASURE WE DERIVE FROM OUR BUSINESS RELATIONS WITH THE NEW JERSEY STATE HIGHWAY DEPARTMENT, AND TO WISH THE DEPARTMENT AND THE "HIGHWAYMAN" A MERRY CHRISTMAS AND A HAPPY AND SUCCESSFUL NEW YEAR.

EDISON PORTLAND CEMENT CO.

DECEMBER, 1921.



ALONG THE ROAD

Get Out For a Sleighride— in the Old Gas Bus!

Do you get what you should out of your car in winter?

Not by a jug-full, if you're like most auto owners—

You keep her stuck up in the garage, except when you have to take her out on business; and then you put on all the curtains or keep all the windows shut tight.

Say, didn't you ever use to go sleigh riding? A little fresh air on your face didn't do any damage, did it,—except to blow some of the cigar ashes out of your whiskers; (or the Pompeian Tint off your nose, *gentle* reader!)

You know what a razor edge such a sleigh ride used to put on the appetite for Christmas and New Year's dinner—how it pepped up the whole party, and put cheeks aglow, and eyes sparkling, and lighted a jovial flame inside, under the left hand upper vest pocket!

Why not a real old-fashioned sleigh ride (on rubber) this Christmas?—or anytime during the winter, for that matter. Wrap up warm; let in the air and sunshine; and try it!

Make up a party to give some old friend a surprise for the holiday season. Take the kids along and make a real time of it—remember how you look back on the Christmas Week trip to Grandpa's!

And you do not know, until you get out to see it, what a fairy land the first snow will make of the old familiar trails.

Try the prescription above;—and if you're not satisfied with the results, let us know, and, by heck, we'll refund your subscription price!



Clean Through!
The result of too heavy traffic

A Lesson for Shippers Who Overload Trucks!

Why do roads and bridges wear out?

Mostly because they have to carry traffic they were never built to bear.

The bridge shown here (somewhere in a neighboring state) was so weakened that an empty truck broke through it.

The New Jersey State Highway Department is on the alert to avoid anything like this by making a careful inspection of

bridges, posting safe loads, and by building scales operated by the New Jersey State Motor Vehicle Department to prevent overloading of vehicles.

Concrete Philosophy

By CORDUROY IKE

Why is it that one dollar spent for taxes to build and maintain good roads looks bigger than \$5.00 spent for tires, repairs, and gas?

Some guys have to go through life with their cut-out wide open, so folks will know their movin'!

Highwayman. Isn't it a better investment to spend money to build a permanent road to begin with, than to pay it out in the attempt to keep a poor road in repair?

Moss-back: I don't know nothin' about investments; but a narrow dirt road was good enough for my grandfather, and I guess it's good enough fer me.

Take it from me, the bird who is always hollerin' about his "right of way", has got the wrong prescription for breaking any records.



Road Tips



MONTHLY BULLETIN OF DETOURS

Adopted by the New Jersey State Highway Commission
Corrected to December 1, 1921

All detours posted with signs and blazed with "Arrows"

(Color signals to right will be used along all State roads as soon as possible.)

ROUTE NO. 1—Rahway-Elizabeth: Union County

Detour through Rahway will not be used after December 15th, when Route No. 1 will be open to Chestnut Street, Roselle. Thence over Chestnut Street to Route No. 9 at Roselle Park and thence over Route No. 9 to Elizabeth.

ROUTE NO. 4—Red Bank-Eatontown: Monmouth County

Road will be open to traffic about December 15th.

ROUTE NO. 4—Absecon-Smithville: Atlantic County.

Road will be open to traffic about December 15th.

ROUTE NO. 5—Budd Lake to Hackettstown: Morris County

Not necessary to detour. New construction is completed along line of the old road. Present construction being along new right of way.

Local roads are in bad condition.

ROUTE NO. 6—Mullica Hill-Bridgeton: Gloucester, Salem, Cumberland Counties

Detour has been abandoned and road opened to all but heavy traffic.

ROUTE NO. 6—Woodstown-Salem: Salem County

Traffic may use present road from Woodstown to a point about three miles south where it will detour over the Jesse Bond Road. Road will be open to traffic about December 15th.

ROUTE NO. 8—Sussex-Unionville: Sussex County

Not necessary to detour, as the present road will be kept open and maintained for traffic during construction.

ROUTE NO. 9—Perryville to West Portal: Hunterdon County

Via Clinton, Glen Gardner, Hampton, Asbury, West Portal.

ROUTE NO. 10—Arcadian Way to Fort Lee Ferry: Bergen County

Not necessary to detour as entire construction is over new right of way.

ROUTE NO. 12—Denville-Parsippany-Pine Brook: Morris County

Denville, Tabor, Morris Plains, Morristown, Whippany, Hanover, Livingston, Roseland, Essex Falls, Caldwell and Pine Brook.

ROUTE NO. 12—Phillipsburg to Port Colden: Warren County

Via Phillipsburg, Bloomsbury, West Portal, Asbury, Washington and Port Colden.



This color [blue] on posts or signs indicates that road is running *North* and *South*



Red shows that it lies *East* and *West*

While yellow tells you that it takes a *diagonal* course *south-east* or *north-west*



And brown indicates that it takes a *diagonal* course *north-east* or *south-west*



For You— "The Highwayman"

Do you use roads? Do you want to know where they are being built, and what detours to take, each month?

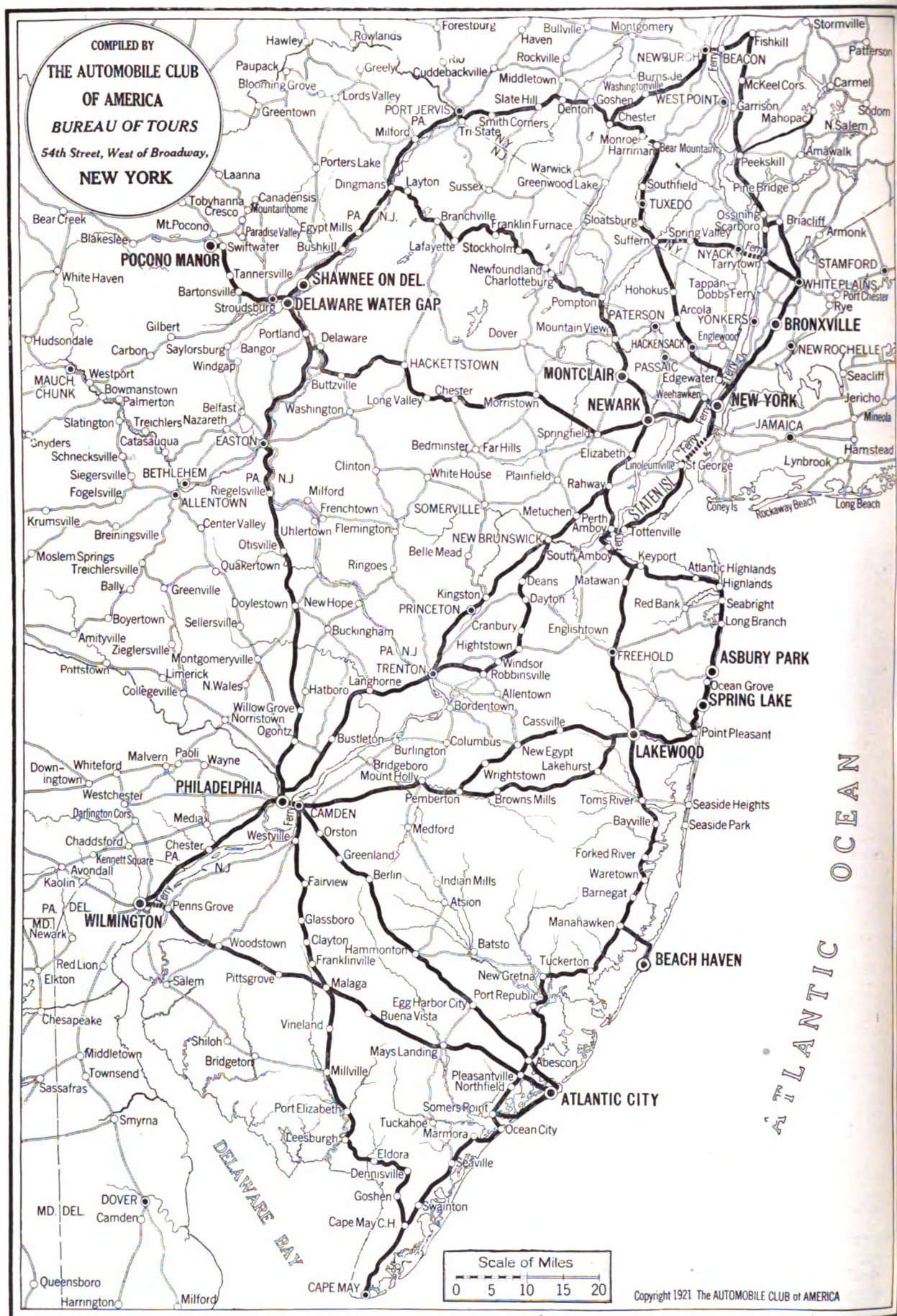
Then send, TODAY, to

The Highwayman
New Jersey State Highway Department
Trenton, N. J.

Just ask to be put on The Highwayman's list. A postal will do.

Turn Over!

On the Back You'll Find the Map.



Reproduced by courtesy of the Automobile Club of America.